

CLAIMS

What is claimed is:

1. An input device for generating signals indicating input requests by a user, the device comprising:
- 5 a base portion;
- a control portion;
- a plurality of input means disposed on said control portion for permitting a user to input a request, at least three of said input means located in substantially the same plane;
- 10 a universal connection means for connecting said control portion to said base portion and for permitting a user to move said control portion universally with respect to the base portion; and
- a signal generating means, operatively connected to the plurality of input means and the universal connection means, for generating a first
- 15 plurality of signals indicating a position of the control portion and for generating a second plurality of signals indicating user data input requests.
2. The input device of claim 1 wherein the plurality of input means comprises five keys which may be depressed by a user.
3. The input device of claim 2 wherein the plurality of input means
- 20 further comprises at least one slider, said at least one slider having a plurality of positions.
4. The input device of claim 3 wherein said at least one slider comprises a joystick.
5. The input device of claim 3 wherein said at least one slider
- 25 comprises a trackball.
6. The input device of claim 1 wherein the universal connection means comprises a gimbal mechanism.
7. The input device of claim 1 wherein the universal connection means comprises a track ball mechanism.
- 30 8. The input device of claim 1 wherein the control portion further comprises a palm portion which is disposed substantially parallel to the base portion.

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9. The input device of claim 1 further comprising a rotational mechanism which permits a user to rotate the control portion with respect to the base portion, wherein the signal generating means is operatively connected to the rotational mechanism and generates a signal indicating rotational position of the control portion with respect to the base portion.

10. A computer system comprising:
at least one input device comprising:

a base portion;

at least one control portion;

a plurality of input means disposed on said control portion

for permitting a user to request a data input to the processor means, at least three of said input means located in substantially the same plane;

at least one universal connection means for connecting each

control portion to said base portion and for permitting a user to move each

control portion universally with respect to the base portion; and

a signal generating means, operatively connected to the plurality of input means and the universal connection means, for generating a first plurality of signals indicating a position of the control portion and for

generating a second plurality of signals indicating user data input requests; and

a processor means operatively connected to said signal generating means for receiving and processing the first and second plurality of signals.

11. The computer system of claim 10 wherein said plurality of input means comprises five keys

12. The computer system of claim 11 wherein said plurality of input means further comprises at least one slider, said at least one slider having a plurality of positions.

13. The computer system of claim 11 comprising at least two input devices.

14. The computer system of claim 11 further comprising a display means operatively connected to the processor means for displaying an image generated by said processor means; and

wherein said processor means comprises a character presentation means for presenting a character presentation graphic on the display means.

15. The computer system of claim 11 wherein the character presentation graphic comprises a plurality of character selection icons;

5 wherein the processor means further comprises character selection means for receiving the data input requests and positional signals and selecting one of the character selection icons; and

wherein the processor means performs a function corresponding to the selected character selection icon.

10 16. The computer system of claim 11 wherein the universal connection means enables a user to move the control portion through a plurality of first discrete positions in a first direction and a plurality of second discrete positions in a second direction and wherein the signal generating means generates positional signals indicating the first discrete position and the second discrete
15 position of the control portion.

17. The computer system of claim 16 further comprising a display means operatively connected to the processor means for displaying an image generated by said processor means,

20 wherein said processor means comprises a character presentation means for presenting a character presentation graphic on the display means, the character presentation graphic comprising a plurality of character selection icons;

wherein the processor means further comprises character selection means for receiving the data input requests and positional signals and selecting one of the character selection icons; and

25 wherein the processor means performs a function corresponding to the selected character selection icon.

18. The computer system of claim 17 wherein the character presentation graphic comprises a plurality of rows and a plurality of vertical clusters, each row-vertical cluster pair comprising no more than five character
30 selection icons.

19. The computer system of claim 18 wherein each character selection icon in each vertical cluster corresponds to one of the input means;

wherein each first discrete position corresponds to a row and each second discrete position corresponds to a vertical cluster; and wherein the character selection means selects the character selection icon corresponding to the first and second discrete positions of the control portion and the input means
5 which generated the user input data request.

20. The computer system of claim 19 wherein the character selection icons corresponding to the first and second discrete positions of the control portion are differentiated in the character presentation graphic.

21. The computer system of claim 20 wherein the character selection
10 icons are differentiated by highlighting.

22. The computer system of claim 11 further comprising a rotational mechanism which permits a user to rotate the control portion with respect to the base portion.

23. The computer system of claim 22 wherein the signal generating
15 means generates a signal indicating a rotational position of the control portion with respect to the base portion.

24. The computer system of claim 23 wherein the processor means further comprises a character selection means for generating a character presentation graphic, the character selection means altering the character
20 presentation graphic in response to rotational positions signals by the signal generating means.

25. In a computer system comprising a plurality of input devices and a processor, each input device comprising a base portion, a control portion, a plurality of input keys disposed on the control portion, at least three of said input
25 keys located in substantially the same plane, a universal connection device for connecting the control portion to the base portion, and a signal generating device, a method comprising the steps of

requesting a data input to the processor device by simultaneously selecting one of the input keys and positioning the control portion universally
30 with respect to the base portion;

generating a signal indicating the selected input key and a current position of the control portion; and

receiving and processing the data input requests and positional signals.

26. The method of claim 25 further comprising the step of displaying an image generated by the processor and a character presentation graphic 5 overlaying the image.

27. The method of claim 26 wherein the character presentation graphic comprises a plurality of character selection icons and further comprising the steps of:

receiving the data input requests and positional signals;
10 selecting one of the character selection icons corresponding to the data input requests and positional signals; and
performing a function corresponding to the selected character selection icon.

30. 28 The method of claim 27 wherein the universal connection device 15 enables a user to move the control portion through a plurality of first discrete positions in a first direction and a plurality of second discrete positions in a second direction and further comprising the step of generating positional signals indicating the first discrete position and the second discrete position of the control portion.

20 29. The method of claim 28 wherein the character presentation graphic comprises a plurality of rows and a plurality of vertical clusters, each row and each vertical cluster comprising no more than five character selection icons.

30. The method of claim 29 wherein each character selection icon in each vertical cluster corresponds to one of the input keys;

25 wherein each first discrete position corresponds to a row and each second discrete position corresponds to a vertical cluster; and wherein the character selection device selects the character selection icon corresponding to the first and second discrete positions of the control portion and the input key which generated the user input data request.

30 31. The method of claim 30 wherein the character selection icons corresponding to a currently active first and second discrete positions of the control portion are differentiated in the character presentation graphic.

32. The method of claim 31 wherein the character selection icons are differentiated by highlighting.

33. The method of claim 25 wherein the input device further comprises a rotational mechanism and further comprising the step of rotating the control portion with respect to the base portion.

34. The method of claim 33 further comprising the step of generating a signal indicating a rotational position of the control portion with respect to the base portion.

35. The method of claim 27 wherein the input device further comprises a rotational mechanism and further comprising the steps of:

rotating the control portion with respect to the base portion.

generating a signal indicating a rotational position of the control portion with respect to the base portion; and

altering the character presentation graphic in response to rotational positions signals by the signal generating device.

36. The method of claim 25 further comprising the step of generating a signal indicating a position of at least one slider, said at least one slider having a plurality of positions.

37. The input device of claim 1, wherein a user's hand is positioned on said control portion such that said user's hand is substantially parallel to said control portion.

38. The input device of claim 2, wherein at least one of said keys is a multi-position switch.

39. The input device of claim 38, wherein said multi-position switch can be moved in four positions and depressed.

40. The input device of claim 38, wherein said multi-position switch is assigned to the user's thumb.

41. The input device of claim 1, wherein said input means are disposed on said control means in an ergonomically pleasing fashion.

42. The input device of claim 1, wherein said control portion can be moved in an x-direction and a y-direction, and can be rotated in relation to said base portion.

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43. The input device of claim 11, wherein at least one of said keys is a multi-position switch.

44. The input device of claim 43, wherein said multi-position switch can be moved in four positions and depressed.

5 45. The input device of claim 43, wherein said multi-position switch is assigned to the user's thumb.

46. The input device of claim 11, wherein said input means are disposed on said control means in an ergonomically pleasing fashion.

47. The input device of claim 11, wherein said control portion can be
10 moved in an x-direction and a y-direction, and can be rotated in relation to said base portion.

48. The input device of claim 25, wherein at least one of said input keys is a multi-position switch.

49. The input device of claim 48, wherein said multi-position switch
15 can be moved in four positions and depressed.

50. The input device of claim 48, wherein said multi-position switch is assigned to the user's thumb.

51. The input device of claim 25, wherein said input keys are disposed on said control means in an ergonomically pleasing fashion.

20 52. The input device of claim 25, wherein said control portion can be moved in an x-direction and a y-direction, and can be rotated in relation to said base portion.

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A1

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B1
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C1